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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Q.01 | The three samples below have been obtained from Normal populations with equal variances. Test the hypothesis that the sample means are equal:   |  |  |  | | --- | --- | --- | | 8 | 7 | 12 | | 10 | 5 | 9 | | 7 | 10 | 13 | | 14 | 9 | 12 | | 11 | 9 | 14 |   Ans:1[F=4 Null Hypothesis Rejected] |
| Q.02 | The following data represents the number of units of production per day turned out by 5 different workers using 4 different types of machines:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Workers | Machine A | Machine B | Machine C | Machine D | | 1 | 44 | 38 | 47 | 36 | | 2 | 46 | 40 | 52 | 43 | | 3 | 34 | 36 | 44 | 32 | | 4 | 43 | 38 | 46 | 33 | | 5 | 38 | 42 | 49 | 39 |  1. Test whether the mean productivity is the same for the different machine type 2. Test whether the 5 men differ with respect to mean productivity.   Ans a) [ F=18.387, H0 rejected]  Ans b) [ F=6.574, H0 rejected] |
| Q.03 | The following table gives the yield on 15 sample plots under three varieties of seeds:   |  |  |  | | --- | --- | --- | | A | B | C | | 20 | 18 | 25 | | 21 | 20 | 28 | | 23 | 17 | 22 | | 16 | 15 | 28 | | 20 | 25 | 32 |   Find out if the average yield of land under different varieties of seeds show significant differences.  Ans [ F=8.14, H0 rejected] |
| Q.04 | To study the performance of three detergents and three different water temperatures, the following whiteness readings were obtained with specially designed equipment:   |  |  |  |  | | --- | --- | --- | --- | | Water Temp | Detergent A | Detergent B | Detergent C | | Cold | 57 | 55 | 67 | | Warm | 49 | 52 | 68 | | Hot | 54 | 46 | 58 |   Perform a two way analysis of Variance, using 5% level of significance.  Ans[F=9.85, H0 rejected, F=2.38, H0 accepted] |
| Q.05 | To test whether the mean time needed to mix a batch of materials is the same for machines produced by 3 manufacturers, a chemical company obtained the following data on the time needed to mix the material. Use these data to determine whether the population mean time for mixing a batch of material differ for the 3 manufacutrer?   |  |  |  | | --- | --- | --- | | I | II | III | | 20 | 28 | 20 | | 26 | 26 | 19 | | 24 | 31 | 23 | | 22 | 27 | 22 |   Ans[F=10.63, H0 rejected] |
| Q.06 | In survey to understand the primary source of news for households in a locality a survey was conducted. The result presented in the table below indicate from where different age groups primarily get their news:   |  |  |  |  | | --- | --- | --- | --- | | Media | Under 35 | 25-30 | 50+ | | Local TV | 107 | 119 | 133 | | National TV | 73 | 102 | 127 | | Radio | 75 | 97 | 109 | | Local Newspaper | 52 | 79 | 107 | | Internet | 95 | 83 | 76 |   At 5% LOS is there evidence of a significant relationship between the age group from where people primarily get their news? If so explain the relationship.  Ans[F=2.8, H0 accepted] |
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